What is claimed is:

1. An optical cross-connect apparatus, comprising:

a light switch having n (n is a natural number of 2 or more) pieces of first port and at least (n + 1) pieces of second port, which switches paths of light signals inputted from each of said first ports and has them outputted from any one of said second ports;

a light path control section for branching a path of said light switch so as to have light signals inputted from any one of said first ports outputted from any two of said second ports; and

a light signal supervising section for supervising quality of light signals outputted from either of said two ports.

2. An optical cross-connect apparatus, according claim1 further comprising:

a light amplifying section for amplifying light signals outputted from either of said two ports; wherein

the light signal supervising section for supervising quality of light signals amplified by this light amplifying section.

3. An optical cross-connect apparatus, comprising:

a light switch having a plurality of first and second ports, which switches paths of light signals inputted from

each of said first ports and has them outputted from any one of said second ports;

a light path control section for branching a path of said light switch so as to have light signals inputted from any one of said first ports outputted from any two of said second ports when supervising said light signals and have light signals inputted from each of said first ports outputted from predetermined one of said second ports when not supervising said light signal; and

a light signal supervising section for supervising quality of light signals outputted from either of said two ports only when performing said supervising.

4. An optical cross-connect apparatus, comprising:

a wavelength separating section for separating, per wavelength component, wavelength multiple light wherein light signals of a plurality of mutually different wavelength components are multiplexed;

a light switch having n (n is a natural number of 2 or more) pieces of first port and at least (n + 1) pieces of second port, which switches light signals of the respective wavelength components separated by said wavelength separating section inputted from each of said first ports and has them outputted from any one of said second ports;

a light path control section for branching a path of said light switch so as to have light signals inputted from one of said first ports outputted from any two of said second ports;

a light signal supervising section for supervising quality of light signals outputted from a predetermined third port of said two ports;

a wavelength component converting section for converting each individual light signal outputted from said second ports excluding said third port into a light signal of predetermined wavelength components; and

a wavelength multiplexing section for multiplexing per predetermined number these light signals converted by the wavelength component converting section.

5. The optical cross-connect apparatus according to claims 2, wherein said light signal supervising section detects and supervises management information placed in an overhead section of a predetermined frame format.

6. The optical cross-connect apparatus according to claim 5, wherein said light path control section sets a path for having light signals to be supervised inputted from each port outputted from said two ports per port in order.

7. The optical cross-connect apparatus according to claims 3, wherein said light signal supervising section detects and supervises management information placed in an overhead section of a predetermined frame format.

8. The optical cross-connect apparatus according to claim 7, wherein said light path control section sets a path for having light signals to be supervised inputted from each port outputted from said two ports per port in order.

9. The optical cross-connect apparatus according to claims 4 , wherein said light signal supervising section detects and supervises management information placed in an overhead section of a predetermined frame format.

10. The optical cross-connect apparatus according to claim 9, wherein said light path control section sets a path for having light signals to be supervised inputted from each port outputted from said two ports per port in order.

11. An optical cross-connect apparatus, comprising:

a light switch having a plurality of first and second ports, which switches paths of light signals inputted from each of said first ports and has them outputted from any one of said second ports and also switches paths of light signals inputted from each of said second ports and has them outputted from any one of said first ports;

n pieces of upward light signal input and output terminals;

n pieces of downward light signal input and output terminals;

a first light circulator provided corresponding to each of said first ports for outputting upward light signals

inputted from each of the upward light signal input terminals to each corresponding port of said first ports and also outputting downward light signals inputted from each of said ports to said downward light signal output terminal;

a second light circulator provided corresponding to each of said second ports for outputting downward light signals inputted from each of the downward light signal input terminals to each corresponding port of said second ports and also outputting upward light signals inputted from each of said ports to said upward light signal output terminal;

a light path control section for branching a path of said light switch means so as to have light signals inputted from any one of said first ports outputted from any two of said second ports and also have light signals inputted from any one of said second ports outputted from any two of said first ports;

a first light signal supervising section for supervising quality of light signals outputted from a predetermined third port of any two of said first ports; and

a second light signal supervising section for supervising quality of light signals outputted from a predetermined fourth port of any two of said second ports.

12. The optical cross-connect apparatus according to claim 11, wherein said first and second light signal supervising sections detect and supervise management information placed in an overhead section of a predetermined frame format.

13. The optical cross-connect apparatus according to claim 11, wherein said light path control section sets a path for having light signals to be supervised inputted from any first or second port outputted from any two of said second or first ports per port in order.

14. The optical cross-connect apparatus according to claim 12, wherein said light path control section sets a path for having light signals to be supervised inputted from any first or second port outputted from any two of said second or first ports per port in order.

15. A signal supervising method, comprising the steps of:

a light switching of switching paths of light signals inputted from each of n (n is a natural number of 2 or more) pieces of first port and outputting them from any of at least (n + 1) pieces of second port;

a light path controlling of branching a path of said light switch so as to have light signals inputted from one of said first ports outputted from any two of said second ports;

a light signal supervising of supervising quality of light signals outputted from either of said two ports.

16. A signal supervising method according claim 15, further comprising the steps of:

a light amplifying of amplifying light signals outputted from either of said two ports; wherein

the light signal supervising of supervising quality of light signals amplified by this light amplifying process.

17. A signal supervising method, comprising the steps of:

a light switching of switching paths of light signals inputted from each of a plurality of first ports and having them outputted from any one of a plurality of second ports;

a light path controlling of branching a path of said light switch so as to have light signals inputted from any one of said first ports outputted from any two of said second ports when supervising said light signal and have light signals inputted from each of said first ports outputted from predetermined one of said second ports when not supervising said light signal; and

a light signal supervising of supervising quality of light signals outputted from either of said two ports only when performing said supervising.

18. A signal supervising method, comprising the steps of:

a wavelength separating of separating, per wavelength component, wavelength multiple light wherein light signals of a plurality of mutually different wavelength components are multiplexed;

a light switching of switching light signals of the respective wavelength components separated by said wavelength

separating process inputted from each of n (n is a natural number of 2 or more) pieces of first port and having them outputted from any one of at least (n + 1) pieces of second port;

a light path controlling of branching a path of said light switch so as to have light signals inputted from one of said first ports outputted from any two of said second ports;

a light signal supervising of supervising quality of light signals outputted from a predetermined third port of said two ports;

a wavelength converting of converting each individual light signal outputted from said second ports excluding said third port into a light signal of predetermined wavelength components; and

a wavelength multiplexing of multiplexing per predetermined number these light signals converted by the wavelength component converting process.

19. The signal supervising method according to claims 15 , wherein said light signal supervising process detects and supervises management information placed in an overhead section of a predetermined frame format.

20. The signal supervising method according to claims 19, wherein said light path control process sets a path for having light signals to be supervised inputted from each port outputted from said two ports per port in order.

21. The signal supervising method according to claims 17 , wherein said light signal supervising process detects and supervises management information placed in an overhead section of a predetermined frame format.

22. The signal supervising method according to claims 21, wherein said light path control process sets a path for having light signals to be supervised inputted from each port outputted from said two ports per port in order.

23. The signal supervising method according to claims 18 , wherein said light signal supervising process detects and supervises management information placed in an overhead section of a predetermined frame format.

24. The signal supervising method according to claims 19, wherein said light path control process sets a path for having light signals to be supervised inputted from each port outputted from said two ports per port in order.